

## Sequence Listing

---

<110> KIM, Bum-Joon  
BIOMEDLAB CORPORATION

<120> PRIMERS FOR AMPLIFYING HSP 65 GENE OF MYCOBACTERIAL SPECIES, HSP  
65 GENE FRAGMENTS AND METHOD OF IDENTIFYING MYCOBACTERIAL SPECIES  
WITH THE SAME

<130> OPP021096KR

<150> KR 10-2002-0004297

<151> 2002-01-24

<150> KR 10-2002-0011648

<151> 2002-03-05

<160> 56

<170> KopatentIn 1.71

<210> 1

<211> 604

<212> DNA

<213> Mycobacterium abscessus

<400> 1

ggaggacccg tacgagaaga tcggcgctga gctggtaag gaagttgcc aagaagaccga	60
cgacgtcgcg ggtgacggca ccaccaccgc caccgtgctc gccaggtc tggtcaagga	120
aggtctgctg aacgtcgccg ccggcgccaa cccgctcggc ctgaagcgcg gtatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct gaagagcgcc aaggaggctg agaccaagga	240
gcagatcgcg gccacggccg gtatctccgc gggcgaccag tccatcggcg acctgatcgc	300
cgaggccatg gacaaggttg gtaacgaggg tgatcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctggagctca ccgaggggat gcgcttcgac aagggtaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480

## Sequence Listing

---

cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggtctctt ccactctggt 600

cgtc 604

<210> 2

<211> 604

<212> DNA

<213> *Mycobacterium africanum*

<400> 2

ggaggatccg tacgagaaga tcggcgccga gctgggtcaaa gaggtagcca agaagaccga 60

tgacgtcgcc ggtgacggca ccacgacggc caccgtgctg gccagggcgt tggttcgcca 120

gggcctgcgc aacgtcgccg ccggcgccaa cccgctcggt ctcaaacgcg gcatcgaaaa 180

ggccgtggag aaggtcaccg agaccctgct caagggcgcc aaggaggctg agaccaagga 240

gcagattgag gccaccgag cgatttcggc ggggtgaccag tccatcggtg acctgatcgc 300

cgaggcgatg gacaaggtgg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt 360

tgggctgcag ctcgagctca ccgagggat gcggttcgac aagggttaca tctcggggta 420

cttcgtgacc gacccggagc gtcaggaggc ggtcctggag gacccctaca tctgctggt 480

cagctccaag gtgtccactg tcaaggatct gctgccgctg ctcgagaagg tcatcggagc 540

cggtaaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600

cgtc 604

<210> 3

<211> 604

<212> DNA

<213> *Mycobacterium asiaticum*

## Sequence Listing

---

<400> 3

ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtggcc ggtgacggca ccacgacggc caccgtgctg gcacaggcgc tggtaagga	120
gggcctgcmc aacgttgcmc caggcgccaa cccgctgggc ctgaagcmc gcacgagaa	180
ggccgtcmg aaggtcacc agaccctgct cagctcgcc aaggacgtcm agaccaagga	240
gcagatcmg gccaccgcm gtatttcgcm gggcgaccag tcgatcmg acctgatcm	300
cgaggcmgt gacaaagtc gcaacgagg tgcacacc gtcgagggt ccaacacct	360
cggcctgcm ctcgagctca ccgaggcmgt gcggttcgac aagggttaca tctcggtca	420
cttcgtcacc gacgcmg gtcaggaag cmctctggag gaccctaca tctgctggt	480
ttccagcaag gtgtcgacc tcaaggacct gtcgcmgt ctggagaag tcatccagg	540
cggaagcm ctgctgatca tcgcmgga cmctcgagg gaggcgtgt caccctggt	600
cgtc	604

<210> 4  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium aichiense*

<400> 4

cgaggacccg tacgagaaga tcggcgctga gctggtcaag gaagtcgcca agaagactga	60
cgatgtcmg ggcgacggca ccaccacgc caccgtgctc gtcaggtc tggttcmga	120
aggtctgcmc aacgtcmgt ccggcgccaa cccgctcggc ctgaagcmc gcacgagaa	180
ggccgtcmg aagatccg agacgctcct caagagcmc aaggaggtcm agaccaagga	240
ccagatcmg gccaccgcm ggtatctcm gggcgaccag accatcmgt acctgatcm	300

## Sequence Listing

---

cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcgcttcgac aagggttaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccgtaca tcctgctggt	480
gtcgtcgaag gtctcgaccg tcaaggacct gcttcccttg ctggagaagg tcattcagtc	540
gggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt ccaccctggt	600
ggtc	604

<210> 5  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium avium

<400> 5 ggaggaccgg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgcc ggtgacggca cgacgacggc cacggtgctc gcccaggcgt tggtcgcgca	120
gggcctgcgc aacgtcgcgg ccggcgccaa cccgtgggt ctcaagcgcg gcacgagaa	180
ggcctcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctg agaccaagga	240
ccagatcgct gccaccgcgg ccattctcgc gggcgaccag tcgatcgcg acctgatcg	300
cgaggcgatg gacaaggctg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc cgtcctcgag gatccgttca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcattcaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt ccaccctggt	600
cgtc	604

## Sequence Listing

---

<210> 6  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium bovis

<400> 6  
 ggaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtagcca agaagaccga 60  
 tgacgtcgcc ggtgacggca ccacgacggc caccgtgctg gcccaggcgt tggttcgca 120  
 gggcctgcgc aacgtcgcg ccggcgccaa cccgctcggc ctcaaacgcg gcatcgaaaa 180  
 ggccgtggag aaggtcaccg agaccctgct caaggcgcc aaggaggctc agaccaagga 240  
 gcagattgcg gccaccgacg cgatttcggc gggtagaccg tccatcggcg acctgatcgc 300  
 cgaggcgatg gacaaggtgg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt 360  
 tgggctgcag ctcgagctca ccgagggtat gcggttcgac aagggtaca tctcgggta 420  
 cttcgtgacc gacccggagc gtcaggaggc ggtcctggag gacccctaca tctgctggt 480  
 cagctccaag gtgtccactg tcaaggatct gctgcgctg ctcgagaagg tcatcgagc 540  
 cggtaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600  
 cgtc 604

<210> 7  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium bovis BCG

<400> 7  
 ggaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtagcca agaagaccga 60  
 tgacgtcgcc ggtgacggca ccacgacggc caccgtgctg gcccaggcgt tggttcgca 120

## Sequence Listing

---

gggcctgcgc aacgtcgcgc ccggcgccaa cccgctcggc ctcaaacgcg gcatcgaaaa	180
ggccgtggag aaggtcaccg agaccctgct caaggcgcc aaggaggtcg agaccaagga	240
gcagattgcg gccaccgcag cgatttcggc gggcgaccag tccatcggtg acctgatcgc	300
cgaggcgatg gacaagggtg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt	360
tgggctgcag ctcgagctca ccgaggtat gcggttcgac aagggtaca tctcgggta	420
cttcgtgacc gacccgagc gtcaggaggc ggtcctggag gaccctaca tcctgctggt	480
cagctccaag gtgtccactg tcaaggatct gctgcgctg ctcgagaagg tcatcgagc	540
cggtaaagccg ctgctgatca tcgccgagga cgtcgaggc gaggcgctgt ccaccctggt	600
cgtc	604

<210> 8  
 <211> 604  
 <212> DNA  
 <213> Mycobacterim celatum Type 1

<400> 8 ggaggacccc tacgaaaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgcg ggtgacgta cgacgacggc cacggtgctg gcccaggcgc tggtaagga	120
gggcctgcgc aacgtcgcgc ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgctgct caaggcgcc aaggaggtcg agaccaagga	240
gcagattgct gccaccgcgc ccattctcgc cggcgaccag tcgatcggcg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggtat gcgcttcgac aagggtaca tctcgggta	420

## Sequence Listing

---

cttcgtcacc gacgccgagc gtcaggaggc ggtgctcgag gagccgtaca tcctgctggt 480  
 cagctccaag gtgtcgacgg tcaaggacct gcttcgctg ctggagaagg tcatccaggc 540  
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctct ccaccctggt 600  
 cgtc 604

<210> 9  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium celatum TypeII

<400> 9  
 ggaggacccc tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga 60  
 cgacgtcgcg ggtgacggta cgacgacggc caccgtgctg gccagggcg tggtcaagga 120  
 aggctcgcg aacgtcgccg ccggtgcca cccgctcggc ctgaagcgcg gtatcgagaa 180  
 ggccgtcgag aaggtcaccg agacgtgct caagggcgcc aaggaggctg agaccaagga 240  
 gcagatcgct gccaccgagg ccattctccg cggtgaccag tcgatcgggc acctgatcgc 300  
 cgaggcgatg gacaaggctg gcaacgagg cgatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctcgagctca ccgagggtat gcgcttcgac aagggtaca tctcgggtta 420  
 cttcgtcacc gacgccgagc gtcaggaggc ggtgctcgag gagccctaca tcctgctggt 480  
 cagctccaag gtgtcgacgg tcaaggatct gctgccgctg ctggagaagg tcatccaggc 540  
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggt gaggcgttga gcaccctggt 600  
 cgtc 604

<210> 10  
 <211> 604

## Sequence Listing

---

&lt;212&gt; DNA

<213> *Mycobacterium chelonae*

&lt;400&gt; 10

```

ggaggaccg tacgagaaga tcggcgctga gctggtcaag gaagttgcca agaagactga      60
cgacgtcgcg ggtgacggca ctactaccgc caccgtgctt gccagggctc tggtaagga      120
aggtctgcgt aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcacgagaa      180
ggccgtggag gccgtcacca gctctctgct ggactccgcc aaggagatcg acaccaagga      240
gcagatcgcg gccaccgcgg gcacgtccgc ggggtgaccag tccatcggtg atctgatcg      300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt      360
cggcctgcag ctggagctca ccgaggcat gcgcttcgac aagggtaca tctcggtta      420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt      480
cagctccaag gtctcgaccg tcaaggacct acttcccttg ctggagaagg tcatccagg      540
cggaagccg ctgctgatca tcgccgagga cgttgagggc gaggtctctt cgaccctggt      600
cgtc                                                    604

```

&lt;210&gt; 11

&lt;211&gt; 604

&lt;212&gt; DNA

<213> *Mycobacterium chitae*

&lt;400&gt; 11

```

ggaggaccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagactga      60
cgacgtcgcc ggcgacggca ccaccaccgc caccgttctg gccagggcgc tggttcgca      120
aggtctgcgc aacgtcgcg ccggcgccaa cccgctcggc ctgaagcgcg gcacgagaa      180
ggccgtcgag accgtctcgg agaacctgct caagtcggcc aaggaggtcg agaccaagga      240

```



## Sequence Listing

---

gcagatcgcc gccaccgccc ggatctccgc gggcgacacc accatcggtg acctgatcgc	300
cgaggccatg gacaagggtg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctggagctca ccgagggcat gcgcttcgac aagggctaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctcgaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcattccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgt cgaccctggt	600
ggtc	604

<210> 12  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium microti

<400> 12 ggaggatccg tacgagaaga tcggcgccga gctggtaaaa gaggtagcca agaagaccga	60
tgacgtcgcc ggtgacggca ccacgacggc caccgtgctg gccagggcgt tggttcgca	120
gggcctgcgc aacgtcgcg ccggcgccaa cccgctcggt ctcaaacgcg gcatcgaaaa	180
ggccgtggag aaggtcaccg agaccctgct caagggcgcc aaggaggtcg agaccaagga	240
gcagattgcg gccaccgcag cgatttcggc gggtgaccag tccatcggtg acctgatcgc	300
cgaggcgatg gacaagggtg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
tgggctgcag ctcgagctca ccgagggat gcggttcgac aagggctaca tctcggggta	420
cttcgtgacc gacccggagc gtcaggaggc ggtcctggag gaccctaca tcctgctggt	480
cagctccaag gtgtccactg tcaaggatct gctgccgctg ctcgagaagg tcattcgagc	540

## Sequence Listing

---

cggttaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600

cgtc 604

<210> 13

<211> 604

<212> DNA

<213> *Mycobacterium flavescens*

<400> 13

ggaggacccg tacgagaaga tcggcgctga gctggtcaag gaagtcgcca agaagaccga 60

cgacgtcgcg ggcgacggca ccaccacgc caccgtgctg gcccaggcgc tcgtgcgcga 120

gggtctgcgc aacgtcgcg cggcgccaa cccgatggcg ctgaagcgcg gtatcgagaa 180

ggccgtcgag aaggtcaccg agacgtgct gaagtcggcc aaggaggctg agaccaagga 240

gcagatcgct gccaccgccc cgatctcggc gggcgacacc cagatcgga agctgatcgc 300

cgaggccatg gacaaggtcg gcaacgaggg tgtcatcacc gttgaggagt ccaacacctt 360

cgggctgcag ctcgagctca ccgagggat gcgcttcgac aagggtaca tctcgggtta 420

cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccctgca tcctgctcgt 480

gtcgtccaag gtgtcgaccg tcaaggatct gctcccgttg ctggagaagg tcattcaggc 540

cggcaagccg gtgctgatca tcgccgagga cgtcgagggt gaggccctgt cgaccctggt 600

ggtc 604

<210> 14

<211> 604

<212> DNA

<213> *Mycobacterium fortuitum* 6841

<400> 14

## Sequence Listing

---

ggaggacccg tacgagaaga tcggcgctga gctcgtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gcacaggccc tggttcgtga	120
aggtctgcgc aacgtcgtg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct gaagagcgcc aaggaggtgg agaccaagga	240
gcagatcgct gccaccgccg gtatctccgc cggtgaccag tccatcggtg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgtcatcacc gtcgaggaga gcaaacacctt	360
cggcctgcag ctggagctca ccgggggtat gcgcttcgac aagggtaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggc	600
ggtc	604

<210> 15  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium fortuitum 49403

<400> 15 ggaggacccg tacgagaaga tcggcgctga gctcgtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gccaggccc tggttcgcga	120
aggtctgcgc aacgtcgtg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct gaagagcgcc aaggaggtgg agaccaagga	240
gcagatcgct gccaccgccg gtatctccgc cggtgaccag tccatcggtg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgtcatcacc gtcgaggaga gcaaacacctt	360

## Sequence Listing

---

cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggctaca tctcggggtta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt ccaccctggt	600
ggtc	604
<210> 16	
<211> 604	
<212> DNA	
<213> Mycobacterium fortuitum 49404	
<400> 16	
ggaggacccg tacgagaaga tcggcgcaga gctggtaag gaagtcgcca agaagactga	60
cgacgtcgca ggcgacggca ccaccacggc caccgtgctc gccaggtc tggttcgca	120
aggtctgcgc aacgtcgag ccggcgccaa cccgctcggc ctgaagcgcg gcacgagaa	180
ggctgtcggg gccgtcacc agacgtgct gaagtccgc aaggaggtgg agaccaagga	240
gcagatcgt gccaccgccc cgatctccgc cggtagctc cagatcggcg agctcatcgc	300
cgaggccatg gacaaggctg gcaacgagg tgatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggctaca tctcggggtta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccgtaca tcctgctcgt	480
ctcgtcgaag gtctcgacgg tcaaggacct gctgcccctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt ccaccctggt	600
ggtc	604

## Sequence Listing

---

<210> 17  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium gastr*

<400> 17  
 ggaggacccg tacgagaaga tcggcgccga gctggtaag gaagtcgcca agaagaccga 60  
 cgacgtcgcc ggcgacggca ccaccacggc caccgtgctc ggcgaggcgc tggtaagga 120  
 gggcctgcgc aacgtcgcgg ccggcgccaa cccgctgggc ctgaagcgcg gcatcgagaa 180  
 ggccgtcgag aaggtcaccg agacgtgct caaggcgcc aaggaggtcg agaccaagga 240  
 gcagatcgcg gccaccgagg ccatctccgc cggtgaccag tcgatcgcg acctgatcgc 300  
 cgaggcgatg gacaaggtgg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctcgagctca ccgagggcat gcggttcgac aagggtaca tctccggcta 420  
 ctctgtcacc gacgtgagc gtcaggaagc tgttctggag gaccctaca tcctgtggt 480  
 cagctcgaag gtctcgaccg tcaaggacct gctgccgctg ttggagaagg tcatccaggc 540  
 gggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600  
 cgtc 604

<210> 18  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium genavense*

<400> 18  
 ggaggacccc tacgagaaga tcggcgctga gctggtaag gaagtcgcca agaagaccga 60  
 cgacgtcgcc ggtgacggca ccacgacggc caccgtgctc gtcaggcgc tcgtcaagga 120

## Sequence Listing

---

gggcctgcgc aacgtggcgg ccggcgccaa cccgctgggc ctcaagcgcg gcatcgagaa	180
ggccgtcgaa aaggtcaccg agacgtctgt gaagtcggcc aaggatgtcg agaccaagga	240
ccagatcgct gccaccgccc cgatttccgc gggcgaccag tcgatcggcg acctgatcgc	300
cgaggcgatg gacaaggtcg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cgggctgcag ctcgagctca ccgagggtat gcgcttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgcgagc gtcagggaag cgtcctggag gacccttca tcctgtggt	480
cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cgccaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctga gcacctggt	600
cgtc	604

<210> 19  
 <211> 603  
 <212> DNA  
 <213> Mycobacterium gordonae

<400> 19 gaggaccctg acgagaagat cggcgctgag ctggtcaagg aagtcgcca gaagaccgac	60
gacgttgccg gcgacggcac gacgacggcg accgtgctgg cgcaggcact ggtcaaggaa	120
ggcctgcgca acgtagccgc ccggcgccaac ccgctggggc tgaagcgcgg catcgagaag	180
gccgtggaga aggtcaccca gaccctgctc agctcggcca aggacgtcga gaccaaggag	240
cagatcgccg ccaccgccc catctccgcg ggtgaccagt cgatcggtga cctgatcgcc	300
gaggcgatgg acaaggtcgg caacgagggc gtcatcaccg tcgaggagtc caacaccttc	360
ggcctgcagc tcgagctgac cgagggcagc cggttcgaca agggctacat ctcgggctac	420
ttcgtcaccg acgccgagcg tcaggaagcc gtccctggaag accctacat cctgctggtg	480

## Sequence Listing

---

tccagcaagg tgctgaccgt gaaggacctg ctgccgctgc tggagaaggt cattcagggt	540
ggcaagccgc tgctgatcat cgccgaggac gtcgagggcg aagcgctgtc gaccctggtc	600
gtc	603

<210> 20  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium haemophilum

<400> 20 ggaggaccgc tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgct ggtgatggca ccacgacggc gacggtgctg gtcaggcgcg tggtaaaga	120
gggcctgcgt aacgtcgcg cgggcgccaa cccgctgggt ctcaagcgcg gcatcgagaa	180
ggcgtcgag aagatcaccg agacgtgct caaggcgcc aaggaggtcg agaccaagga	240
ccaaattgcg gccaccgcag cgatctcggc gggtgaccag tcgatcgcg acctgatcg	300
cgaggcgatg gacaaggctg gcaacgagg cgatcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggcat gcggttcgat aagggtaca tctcgggcta	420
cttcgtcacc gacgccgagc gccaggaagc cgtcctggag gacccctaca tcctgctggt	480
cagctccaag gtgtcgaccg tcaaggacct gctgccactg ttggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgaggcg gaggcgctgt ccaccctggt	600
cgtc	604

<210> 21  
 <211> 603  
 <212> DNA

## Sequence Listing

---

<213> Mycobacterium interjectum

<400> 21

gaggacccgt acgagaagat cggcgccgag ctggtcaagg aagtcgcaa gaagaccgac	60
gacgtcgccg gtgacggcac gacgacggcc acggtgctgg cccaggccct ggtcaaggag	120
ggcctgcgca acgtcgggc cggcgccaac ccgccggcgc tcaagcgcg catcgaaaag	180
gccgtcgaga aggtcaccga gaccctgctg aagtcggcca aggatgtcga gaccaaggag	240
cagatcgccg cgaccggcgc gatctccg cgcgaccagt cgatcggcga cctcatcgcc	300
gaggcgatgg acaaggctcg caacgagggc gtcacaccg tcgaggagtc caacaccttc	360
ggcctgcagc tcgagctcac cgaggcatg cggttcgaca agggctacat ctcgggctac	420
ttcgtcaccg acgccgagcg tcaggaagcg gtcctcgagg acccctacat cctgctggtc	480
agctcgaagg tgtcgacggt caaggacctg ttgccgtgc tggagaaggt catccaggcc	540
ggcgagccgc tggtgatcat cgccgaggac gtcgagggcg aggcgctgtc caccctggtc	600
gtc	603

<210> 22

<211> 604

<212> DNA

<213> Mycobacterium intermedium

<400> 22

ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtgcca agaagacgga	60
cgacgtcgcc ggtgacggca ccacgacggc caccgtgctc gccaggcgc tggcgcgga	120
gggtctgcgc aatgtcgctg ccggtgcaa cccgctgagc ctgaagcgcg gtatcgagaa	180
ggcagtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctg agaccaagga	240



## Sequence Listing

---

ccagatcgct gccaccgcag cgatttcgc gggggaccag tcgatcggcg acctgatcgc	300
cgaggcgatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag cttgagctca ccgaggggat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc cgtcctggaa gacccgtaca tcctgctggt	480
cagctccaag gtctcgacgg tcaaggacct gctcccgctg ctggagaagg tcattcaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgtga gcaccctggt	600
cgtc	604

<210> 23  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium intracellulare

<400> 23 ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgcc ggtgacggca cgacgacggc cacggtgctg gtcaggcgt tggtcgcga	120
ggcctgcgt aacgtcgccg ccggcgccaa cccgctgggt ctcaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggtcg agaccaagga	240
ccagatcgct gccaccgcgg cgatttcggc gggcgaccag tcgatcggtg acctcatcgc	300
cgaggggatg gacaaggtcg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggcat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc ggtcctcgag gaccccttca tcctgctggt	480
cagctccaag gtctcgacgg tcaaggacct gctgccgctg ctggagaagg tcattcaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggt gaggcctga gcaccctggt	600

## Sequence Listing

---

cgtc 604

<210> 24  
 <211> 604  
 <212> DNA  
 <213> Mycobaterium kansasii Type I

<400> 24  
 ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga 60  
 cgacgtcgct ggcgacggca ccaccacggc caccgtgctt gcgcaggcgc tggtaaaga 120  
 gggcctgcgc aacgtcgcg ccggcgccaa cccgctgggc ctcaagcgcg gcatcgagaa 180  
 ggccgtcgag aaggtcaccg agacgtgct caagggcgcc aaggaggtcg agaccaagga 240  
 gcagatcgcg gcgaccgcg ccattctcgc cggcgaccag tcgatcgcg acctgatcgc 300  
 cgaggcgatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcaa ctcgagctca ccgagggcat gcggttcgac aagggttaca tctccggcta 420  
 ctctgtcacc gacgccgagc gtcaggaagc ggttctggag gaccctaca tcctgctggt 480  
 cagctcgaag gtatcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc 540  
 cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccacctggt 600  
 cgtc 604

<210> 25  
 <211> 604  
 <212> DNA  
 <213> Mycobaterium kansasii Type II

<400> 25  
 ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga 60

## Sequence Listing

---

cgacgtcgcc ggcgacggca ccaccacggc cactgtgctc gcgcaggcgt tggtaaaga	120
gggcctgcgc aacgtgcgg ccggcgccaa cccactgggc ctgaagcgcg gcatcgagaa	180
ggcagtcgag aaggtcaccg agacgctgct caaggcgcc aaggaggtcg agaccaagga	240
gcagatcgct gccaccgcgg ccattctcgc gggtgaccag tcgacggcg acctgatcgc	300
cgaggcgatg gacaaggtgg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggtat gcggttcgac aagggtaca tctccggcta	420
cttcgtcacc gacgcccagc gtcaggaagc agttctggag gaccctaca tctgctggt	480
cagctccaag gtgtccaccg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

<210> 26  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium kansasii Type III

<400> 26	
ggaggaccg tacgagaaga tcggcgccga gctggtaag gaagtcgcca agaagaccga	60
cgacgtcgcc ggcgacggca ccaccacggc cactgtgctc gcgcaggcgc tcgtcaagga	120
gggcctgcgc aacgtggcg ccggcgccaa cccgctgggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacctgtt caagggtgcc aaggaggtcg agaccaagga	240
gcagatcgcg gccaccgcgg ccattctcgc cggtgaccag tcgattggcg acctgatcgc	300
cgaggcgatg gacaaggtag gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360

## Sequence Listing

---

aggcctgcag ctcgagctca ccgagggat gcgctttgac aagggtaca tctccggcta	420
cttcgtcacc gacgccgagc gtcaggaagc agtgctggaa gaccctaca tcttctggt	480
cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggg gaggccttga gcaccctggt	600
cgtg	604

<210> 27  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium leprae

<400> 27 ggaggacccg tacgagaaga ttggcgctga gttggtcaag gaagtcgcca agaagacaga	60
tgacgtcgcc ggtgatggca ccacgacggc caccgtgctg gccagggcat tggtaaaga	120
gggcctacgc aacgtcgcg cggcgccaa cccgctaggt ctcaagcgtg gcacgagaa	180
agctgtcgat aaggtaactg agactctgct caaggacgct aaggaggtcg aaaccaagga	240
acaaattgct gccactgcag cgatttcggc ggggtaccag tcgatcggtg atctgatcgc	300
cgaggcgatg gacaaggttg gcaacgaggg tggtatcacc gtcgaggaat ccaacacctt	360
cggtctgcag ctcgagctca ccgaggaat gcggttcgac aagggtaca ttccgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc tgcctagag gagccctaca tccttctggt	480
cagctccaaa gtgtctaccg tcaaggacct gctgccgctg ctgagaagg tcatccaggc	540
cggcaagtcg ctgctgatca ttgctgagga tgcgagggg gaggcgttgt ctaccctggt	600
cgtc	604

## Sequence Listing

---

<210> 28  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium malmoeense*

<400> 28  
 ggaggacccg tacgagaaga tcggcgccga gctgggtcaag gaagtcgcca agaagaccga 60  
 cgacgtggcc ggtgacggca cgacgacggc caccgtgctg gcgcaggcgc tggtaaaga 120  
 gggcctgcgc aacgtgcgga ccggtgccaa cccgctcagc ctcaagcgcg gcatcgagaa 180  
 ggcggtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctc agaccaagga 240  
 gcagatcgcc gcgaccgccg cgatctcggc gggcgaccag tcgatcggcg acctgatcgc 300  
 cgaggcgatg gacaaggctc gcaacgaggg cgtcctcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctcgagctca ccgagggcat gcggttcgac aagggtaca tctcgggcta 420  
 ctctgctacc gaccccgagc gtcaggaagc ggtcctggag gaccctaca tcctgctggt 480  
 cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcattcaggc 540  
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctct ccaccctggt 600  
 cgtc 604

<210> 29  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium marinum*

<400> 29  
 ggaggacccg tacgagaaga tcggcgctga gctgggtcaag gaagttgcca agaagaccga 60  
 cgacgtggcc ggtgacggca cgacgacggc caccgtgctg gccaggcgc tggtaaagga 120  
 aggcctgcgc aacgttgcgg ccggtgccaa cccgctcggc ctgaagcgcg gcatcgagaa 180

## Sequence Listing

---

ggcagtcgag aaggtcaccg agaccttgct caagtcggcc aaagaggtcg agaccaagga	240
gcagatcgcg gcgaccgag ccatctccgc cggcgaccag tcgatcgcg acctgatcg	300
cgaggcgatg gacaaggtgg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaagc ggtcctggag gaccctaca tctgctggt	480
cagttccaag gtgtccaccg tgaaggacct gtcgccgtg ctggagaagg tcattcaggg	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

<210> 30  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium mucogenicum

<400> 30 ggaggacccg tacgagaaga tcggcgctga gctggtcaag gaagttgcc aagaagacgga	60
cgacgtcgct ggcgacggca ccaccaccgc caccgtgctg gccagggccc tggttcgca	120
aggcctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag gctgtcacca agggcctgct ggcttcggc aaggaggtcg agaccaagga	240
gcagatcgct gccaccgccc ggatctcggc cggtgaccag tccatcgcg acctgatcg	300
cgaggccatg gacaaggtcg gcaacgaggc tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gaccgttca tctgctggt	480

## Sequence Listing

---

cagctcgaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540  
 gggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600  
 cgtc 604

<210> 31  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium neoaurum

<400> 31  
 ggaggacccg tacgagaaga tcggcgccga gctggtcaaa gaggtcgcca agaagaccga 60  
 tgacgtcgcg ggcgacggca ccaccaccgc caccgtgctg gccagggccc tggttcgcg 120  
 aggtctgcgc aacgtcgcg cggcgccaa cccctcggc ctgaagcgcg gcatcgagaa 180  
 ggccgtcgcg gccgtcaccg agcgctgct ctcgaccgcc aaagaggctg agaccaagga 240  
 gcagatcgct gccaccgcg gcatctccgc cggtgaccag tcgatcggtg acctgatcgc 300  
 cgaggcgctg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctggagctca ccgagggtat gcgcttcgac aagggtaca tctcgggtta 420  
 ctctgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tctgtgtgt 480  
 cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540  
 cggcaagccg ttgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600  
 ggtc 604

<210> 32  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium nonchromogenicum

## Sequence Listing

---

<400> 32  
 ggaggatccc tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagactga 60  
 cgacgtcgcg ggtgacggca ccaccaccgc caccgtgctc gccagggccc tggtaagga 120  
 aggcctgcgc aacgtggccg ccggcgccaa cccgtgggt ctgaagcgcg gcatcgagaa 180  
 ggccgttgag aaggtcacct cgaccctgct ggcttcggcc aaggaggtcg agaccaagga 240  
 gcagatcgcg gccaccgccc gtatctccgc gggtgaccag agcatcggtg acctgatcgc 300  
 cgaggccatg gacaaggtcg gcaacgaagg tgtcatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctggagctca ccgagggcat gcgcttcgac aagggtaca tctcgggtta 420  
 cttcgtgacc gacgcccagc gtcaggaagc cgtcctggag gaccctaca tctgctggt 480  
 cagctcgaag atctcgaccg tcaaggacct gctgcccttg ctggagaagg tcatccagtc 540  
 cggaagccg ttgtgatca tcgccgagga cgtcgagggc gaggcctgt cgaccctggt 600  
 cgtg 604

<210> 33  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium paratuberculosis

<400> 33  
 ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga 60  
 cgacgtcgcc ggtgacggca cgacgacggc cacggtgctc gccagggcgt tggtcgcga 120  
 gggcctgcgc aacgtcgcg ccggcgccaa cccgtgggt ctcaagcgcg gcatcgagaa 180  
 ggccgtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggtcg agaccaagga 240  
 ccagatcgct gccaccgccc ccatctccgc gggcgaccag tcgatcgcg acctgatcgc 300



## Sequence Listing

---

cgaggcgatg gacaaggctg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcggttcgac aaggggtaca tctcgggcta	420
cttcgtcacg gacgccgagc gtcaggaagc ggtcctcgag gacccgttca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt ccaccctggt	600
cgtc	604

<210> 34  
 <211> 604  
 <212> DNA  
 <213> Mycobaterium phlei

<400> 34	
cgaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtcgcca agaagaccga	60
cgatgtcgcg ggtgacggca ccaccaccgc caccgtcctg gccagggcgc tggcgcgcg	120
gggtctgcgc aacgttgccg ccggcgccaa cccgatggct ctgaagcgcg gtatcgagaa	180
ggccgtcgag aaggtcaccg agaccctgct gaagtcggcc aaggaggtcg agaccaagga	240
gcagatcgct tcgaccgccg cgatctcggc cggcgacacc cagatcggcg agctgatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcggttcgac aagggctaca tctcgggcta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctcgag gatccgtaca tcctgctggt	480
gtcgggcaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
gggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt cgaccctggt	600

## Sequence Listing

---

cgtag 604

<210> 35

<211> 604

<212> DNA

<213> *Mycobacterium peregrinum*

<400> 35

ggaggacccg tacgagaaga tcggcgctga gctgggtcaaa gaggtcgcca agaagaccga 60

cgacgtcgcg ggtgacggca ccaccaccgc caccgttctg gcccaggccc tggttcgca 120

aggtctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa 180

ggctgtcgag aaggtcaccg agaccctcct gaagtccgcc aaggagggtg agaccaagga 240

gcagatcgct gccaccgccc gtatctccgc cggagaccag tccatcggcg acctgatcgc 300

cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt 360

cgggctgcag ctggagctca ccgagggcat gcgcttcgac aagggtaca tctcgggcta 420

cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt 480

cagctcgaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540

cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt 600

ggtc 604

<210> 36

<211> 604

<212> DNA

<213> *Mycobacterium scrofulaceum*

<400> 36

ggaggacccg tacgagaaga tcggcgccga gctgggtcaag gaagtcgcca agaagaccga 60

## Sequence Listing

---

cgacgtcgcc ggtgacggca cgacgacggc cacggtgctg gccagggcgc tggtaagga	120
gggcctgcgc aacgtcgcgc cgggcgccaa cccgctgagc ctcaagcgcg gcatcgagaa	180
ggcggtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggctg agaccaagga	240
ccagatcgcc gccaccgcgc cgatttcggc gggcgaccag tcgatcggcg acctgatcgc	300
cgaggcgatg gacaaggtcg gcaacgaggc cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggcatc gcggttcgac aagggtaca tctcgggcta	420
cttcgtcacc gacgccgagc ggcaggaagc ggtcctggag gaccctaca tctgctggt	480
cagctcgaag gtgtcgacgc tcaaggacct gctgcgctg ttggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgcttt ccaccctggt	600
cgtc	604

<210> 37  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium senegalense

<400> 37	
ggaggaccgc tacgagaaga tcggcgctga gctggtcaag gaagtcgcca agaagactga	60
cgacgtcgcg ggtgacggca ccaccaccgc caccgttctg gccagggccc tggttcgtga	120
aggtctgcgt aacgtcgcgc cgggcgccaa cccgctcgcc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct caagagcgcc aaggagggtg agaccaagga	240
gcagatcgct gccaccgcgc cgatctcgcc gggcgacacc cagatcgcca agctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggc tgtcatcacc gttgaggagt ccaacacctt	360
cgggctgcag ctcgagctca ccgagggtat gcgcttcgac aagggtaca tctcgggtta	420

## Sequence Listing

---

cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccctgca tcctgctcgt	480
gtcgtccaag gtgtcgaccg tcaaggatct gtcctcggtg ctggagaagg tcattcaggc	540
cggaagccg gtgctgatca tcgccgagga cgtcgagggt gaggccctgt gcaccctggt	600
ggtc	604

<210> 38  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium shimoidei

ggaggaccgc tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgcc ggtgacggca ccaccaccgc caccgtgctg gccagggcgc tgggccacga	120
ggggctgcgc aacgtcgcg cgggtgcca cccgtcagc ctgaaacgcg gtatcgagaa	180
ggccgttgag aaggtcaccg agaccttgc caagggcgcc aaggaagtcg agaccaagga	240
gcagatcgcg gccacggcgg ccattctccgc cggtgaccag tcgatcggcg acctgatcgc	300
cgaggcgatg gacaaggtcg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggtat gcggttcgac aagggtaca ttctgggtta	420
cttcgtcacc gacgccgagc gtcaggaggg tgtgctcgag gagccctaca tcctgctggt	480
cagctccaag gtgtcgacgg tcaaggacct gtcgctcg ctggagaagg tcatgcaggc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcttga gcaccctggt	600
cgtc	604

<210> 39

## Sequence Listing

---

<211> 604  
 <212> DNA  
 <213> *Mycobacterium simiae*

<400> 39  
 ggaggacccc tacgagaaga tcggcgctga gctggccaag gaagtcgcca agaagaccga 60  
 cgacgtcgcc ggtgacggca ccacgacggc caccgtgctc gtcaggcgc tcgtcaagga 120  
 gggcctgcgc aacgtggcgg ccggcgccaa cccgctgggc ctcaagcgcg gcacgcagaa 180  
 ggccgtcgaa aaggtcaccg agacgtgctt gaagtcggcc aaggatgtcg agaccaagga 240  
 ccagatcgct gccaccgccc cgatttccgc gggcgaccag tcgatcggcg acctgatcgc 300  
 cgaggcgatg gacaaggctg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt 360  
 cgggctgcag ctgcagctca ccgagggtat gcgcttcgac aagggtctaca tctcgggcta 420  
 ctctgtcacc gacgccgagc gtcaggaagc cgtctggag gaccctgtca tctgtctggt 480  
 cagctccaag gtgtcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccaggc 540  
 cggaagccc ctgctgatca tcgccgagga cgtcgagggc gaggcgctga gcaccctggt 600  
 cgtc 604

<210> 40  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium smegmatis*

<400> 40  
 cgaggacccc tacgagaaga tcggtgctga gctcgcaaaa gaggtcgcca agaagaccga 60  
 cgatgtcgct ggcgacggca ccaccaccgc caccgtcctg gtcaggccc tggttcgca 120  
 aggcctgcgc aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcacgcagaa 180

## Sequence Listing

---

ggccgtcgag aaggtcaccg agaccctgct gaagtccgcc aaggagggtg agaccaagga	240
gcagatcgct gccaccgccg gtatctccgc cggtgaccag tccatcggcg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgagggtat gcgcttcgac aagggttaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc ggtcctcgag gatccctaca tcctgctggt	480
cagctcgaag gtctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt	600
ggtc	604

<210> 41  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium szulgai

<400> 41	
ggaggacccg tacgagaaga tcggcgccga gctggtcaag gaagttgcc aagaagaccga	60
cgacgtcgcc ggtgacggca cgacgacggc caccgtgttg gccagggcg tggtaagga	120
gggcctgcgc aacgtagcgg ccggcgccaa cccgctgggt ctcaagcgc gcatcgagaa	180
ggccgtcgag aagatcaccg agaccctgct caagtcggct aaggacgtcg agaccaagga	240
gcagatcgcg gccaccgcg ccattctccgc gggcgaccag tcgatcggcg acttgatcgc	300
cgaggcgatg gacaaggtcg gcaatgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
cggcctgcag ctcgagctca ccgaggcat gcggttcgac aagggttaca tctcgggcta	420
cttcgtcacc gacgccgagc gtcaggaggc cgtcctcgag gacccttaca tcctgttggt	480
cgctccaag gtgtcgacgg tcaaggacct gttgccgctg ctggagaagg tcatccaggg	540

## Sequence Listing

---

cgccaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccttga gcaccctggt 600

cgtc 604

<210> 42

<211> 604

<212> DNA

<213> *Mycobacterium terrae*

<400> 42

ggaggacccc tacgagaaga tcggcgccga gctggtcaaa gaggtcgcca agaagaccga 60

cgatgtcgcc ggtgacggca ccaccacggc caccgtgctg gcacaggcgc tggtaagga 120

aggcctgcgc aacgtggccg ccggcgccaa cccgctggcc ctgaagcgcg gcacagagaa 180

ggccgtcgag aaggtctccg agaccctgct gaaggacgcc aaggaggtcg agaccaagga 240

gcagatcgcg gctaccgccc ggatctccgc gggcgaccag tccatcggtg acctgatcg 300

cgaggcgatg gacaaggctg gcaacgaggg tgatcatcacc gtcgaggagt ccaacacctt 360

cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggttaca tctcggtta 420

cttcgtcacc gacgccgacc gtcaggaagc ggttctcgag gacccttaca tctgctggt 480

cagctccaag atctcgacgg tcaaggacct gctccactg ctggagaagg tcattcaggg 540

cggttaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgtt ccaccctggt 600

ggtc 604

<210> 43

<211> 604

<212> DNA

<213> *Mycobacterium thermoresistibile*

## Sequence Listing

---

<400> 43  
 ggaggacccc tacgagaaga tcggcgctga gctgggtcaag gaagtcgcca agaagaccga 60  
 cgacgtcgcc ggcgacggca ccaccaccgc caccgtcctg gtcaggcgcg tggatgaagga 120  
 aggtttgcgc aacgtcgccg cgggggcca cccgctcgct ctgaagcgcg gcatcgaggc 180  
 cgctgtcgag aaggtcaccg agaccctgct caagtcggcc aaggaggtcg agaccaagga 240  
 gcagatcgcc aacaccgccg cgatctcgcc cggcgaccag cagaccggtg agctgatcgc 300  
 cgaggcgatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt cgcagacctt 360  
 cggctctcag ctcgagctca ccgagggtat gcgcttcgac aagggttaca tctcggggta 420  
 ctctgtgacc gacgcggagc ggcaggaagc cgttctggag gatccctaca tcctgctggt 480  
 cagctcgaag gtctcgactg tcaaggatct gctgccgctg ctggagaagg tcatccagtc 540  
 cggcaggccg ctgctgatca tcgccgagga cgtcgaaggc gaggcgctgt cgaccctggt 600  
 cgtc 604

<210> 44  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium triviale

<400> 44  
 ggaggacccg tacgagaaga tcggcgccga gctgggtcaag gaagtcgcca agaagaccga 60  
 cgatgtcgcc ggtgacggca ccaccacggc caccgtgctc gccaggcgcg tggatgcgca 120  
 gggcctcgcg aacgtcgccg cgggggcca cccgatgggc ctgaagcgcg gcatcgaggc 180  
 gccaccgag aagatcgccg agaccctgct caaggcgcc aaagggtg agaccaagga 240  
 gcagatcgct gccaccgccg ggatctccgc cggggacagc tccatcggtg agctgatcgc 300



## Sequence Listing

---

cgaggcgatg gacaagggtcg gcaacgaggg tgtcatcacc gtcgaggagg cccagacctt	360
cggcctgcag ctcgagctca ccgaggggtat gcggttcgac aagggtaca tctccggcta	420
cttcgtcacc gacgccgagc gtcaggaggg cgtgctggag gaccctaca tcctgctggt	480
gtccggcaag gtgtccaccg tcaaggacct gttccgctg ctggagaagg tcatccagtc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt cgaccctggt	600
ggtc	604

<210> 45  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium tuberculosis

<400> 45 ggaggatccg tacgagaaga tcggcgccga gctggtcaaa gaggtagcca agaagaccga	60
tgacgtcgcc ggtgacggca ccacgacggc caccgtgctg gccaggcgt tggttcgga	120
ggcctgcgc aacgtcgcg ccggcgccaa cccgctcggc ctcaaacgcg gcatcgaaaa	180
ggcgtggag aaggtcaccg agaccctgct caaggcgcc aaggaggctg agaccaagga	240
gcagattgct gccaccgag cgatttcggc gggtgaccag tccatcggtg acctgatcgc	300
cgaggcgatg gacaagggtg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt	360
tgggctgcag ctcgagctca ccgaggggtat gcggttcgac aagggtaca tctcgggta	420
cttcgtgacc gaccggagc gtcaggaggg ggtcctggag gaccctaca tcctgctggt	480
cagctccaag gtgtccactg tcaaggatct gctgccgctg ctcgagaagg tcatcgagc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt	600
cgtc	604

## Sequence Listing

---

<210> 46  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium ulcerans*

<400> 46  
 ggaggacccg tacgagaaga ttggcgctga gctggtcaag gaagttgccca agaagaccga 60  
 cgacgtggcc ggtgacggca cgacgacggc caccgtgctg gccagggcgc tggtaagga 120  
 aggcctgcgc aacgttgctg ccggtgccaa cccgctcggc ctgaagcgcg gcacgcagaa 180  
 ggacgtcgag aaggtcacgc agaccctgct caaatcggcc aaagaggtcg agaccaagga 240  
 gcagatcgcg gcgaccgcag ccacctcgcg cggcgaccag tcgatcggcg acctgatcgc 300  
 cgaggcgatg gacaaggtgg gcaacgaggg cgtcatcacc gtcgaggagt ccaacacctt 360  
 cggcctgcag ctgcagctca ccgaggggat gcggttcgac aagggctaca tctcgggcta 420  
 cttcgtcacc gacgccgagc gtcaggaagc ggtcctggag gacccctaca tctcgtcgtt 480  
 cagctccaag gtgtccaccg tcaaggacct gctgccgctg ctggagaagg tcattcaggg 540  
 cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcgctgt ccaccctggt 600  
 cgtc 604

<210> 47  
 <211> 604  
 <212> DNA  
 <213> *Mycobacterium vaccae*

<400> 47  
 ggaggacccg tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagaccga 60  
 cgacgtcgcg ggcgacggta ccaccaccgc caccgtgctc gctcaggctc tggttcgca 120

## Sequence Listing

---

aggcctgcgc aacgtcgag ccggcgccaa cccgctcggc ctcaagcgtg gcatcgagaa	180
ggctgtcgag gctgtcacc agtcgtgtct gaagtcggcc aaggaggctg agaccaagga	240
gcagatttct gccaccgcg cgatctccgc cggcgacacc cagatcggcg agtcatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctcgagctca ccgaggggat gcgcttcgac aagggtaca tctcgggtta	420
cttcgtgacc gacgccgagc gccaggaagc cgtcctggag gatccctaca tctgctggt	480
cagctccaag gtgtcgaccg tcaaggatct gctcccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt ccacgctggt	600
ggtc	604

<210> 48  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium wolinskyi

ggaggaccgc tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcc ggcgacggca ccaccaccgc caccgttttg gccaggctc tggttcgga	120
aggtctgcgc aacgtcgcg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgtct gaagagcgcc aaggagggtg agaccaagga	240
gcagatcgt gccaccgcg gtatctccgc cggtgaccag tccatcggcg acctgatcgc	300
cgaggccatg gacaaggtcg gcaacgaggg tgatcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggat gcgcttcgac aagggtaca tctcgggtta	420

## Sequence Listing

---

cttcgtgacc gacgccgagc gtcaggaagc cgtcctcgag gatccctaca tcctgctggt	480
cagctcgaag gcctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggccctgt cgaccctggt	600
ggtc	604

<210> 49  
 <211> 604  
 <212> DNA  
 <213> Mycobacterium parafortuitum

<400> 49 ggaggacccg tacgagaaga tcggcgctga gctggtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgtgctc gctcaggccc tggttcgga	120
aggtctgcgc aacgtcgag ccggcgccaa cccgctcggc ctcaagcgtg gcatcgagaa	180
ggctgtcgag gctgtcacc agggtctgct gaagtcggcc aaggaggctg agaccaagga	240
gcagatcgct gccaccgccc cgatctccgc cggcgacacc cagatcggcg agctcatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggagt cgaacacctt	360
cggcctgcag ctggagctca ccgaaggcat gcgcttcgac aagggtaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca ttctgctggt	480
cagctccaag atctcgacgg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt cgaccctggt	600
ggtc	604

<210> 50  
 <211> 604

## Sequence Listing

---

<212> DNA

<213> *Mycobacterium farcinogenes*

<400> 50

ggaggacccg tacgagaaga tcggcgctga gctcgtcaaa gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gcccaggccc tggttcgcg	120
aggtctgctg aacgtcgctg ccggcgccaa cccgctcggc ctgaagcgcg gcatcgagaa	180
ggccgtcgag aaggtcaccg agacgtgct caagagcgcc aaggaggtgg agaccaagga	240
gcagatcgct gccaccgccg gtatctccgc cggtgaccag tccatcggtg acctgatcgc	300
cgaggccatg gacaaggctg gcaacgaggg tgtcatcacc gtcgaggaga gcaacacctt	360
cggcctgcag ctggagctca ccgaggggtat gcgcttcgac aagggtaca tctcgggtta	420
cttcgtgacc gacgccgagc gtcaggaagc cgtcctggag gatccctaca tcctgctggt	480
cagctccaag gtctcgaccg tcaaggatct gctgccgctg ctggagaagg tcatccagtc	540
cggaagccg ctgctgatca tcgccgagga cgtcgagggc gaagccctgt ccaccctggt	600
ggtc	604

<210> 51

<211> 604

<212> DNA

<213> *Tsukamurella paurometabola*

<400> 51

cgaggatccc tacgagaaga tcggcgccga gctcgtcaag gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gcccaggcgc tcgtgcgcga	120
gggtctgctg aacgtggctg cgggtgcgaa cccgctgggc ctcaagcggg gcatcgagaa	180
ggccgtcgag gccgtgaccg agcacctgct caaggaggcc aaggaggtcg agaccaagga	240

## Sequence Listing

---

gcagatcgct gctaccgcgg gcatctcggc cggcgacccc gccatcggtg agtcatcgc	300
cgaggccatg gacaaggtcg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggctctccag ctggagctca ccgagggcat gcgcttcgac aagggttca tctcgggcta	420
cttcgccacc gacgccgagc gtcaggaggc cgtgctcgag gacgcctaca tcctgctcgt	480
gtcgagcaag atctcgaccg tgaaggacct gctgccgctg ctggagaagg tcatccagtc	540
gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgctcat	600
cgtc	604

<210> 52  
 <211> 604  
 <212> DNA  
 <213> Tsukamurella tyrosinosolvens

<400> 52 cgaggatccc tacgagaaga tcggcgccga gctcgtaag gaggtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gccaggcgcg tcgtgcgcga	120
gggcctgcgc aacgtggccg cgggcgcgaa cccgctgggc ctcaagcggg gcatcgagaa	180
ggccgtcgag gccgtctccg agcacctgct gaagcccgcc aaggaggtcg agaccaagga	240
gcagatcgct gctaccgcgg gcatctcggc cggcgacccc gccatcggtg agtcatcgc	300
cgaggccatg gacaaggtcg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggcctccag ctggagctca ccgagggcat gcgcttcgac aagggttca tctcgggcta	420
cttcgccacc gacgccgagc gtcaggaggc cgtgctcgag gacgcctacg tgctgctcgt	480
cgccggcaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc	540

## Sequence Listing

---

gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgctcat 600

cgtc 604

<210> 53

<211> 604

<212> DNA

<213> Tsukamurella pulmonis

<400> 53

cgaggatccc tacgagaaga tcggcgccga gctcgtcaag gaggtcgcca agaagaccga 60

cgacgtcgcg ggcgacggca ccaccaccgc caccgttctg gccagggcg tcgtgcgcga 120

gggtctgcgg aacgtggccg cgggcgcgaa cccgctgggc ctcaagcggg gcatcgagaa 180

ggcggtcgac gccgtcaccg agcacctgct gaaggccgcc aaggaggctg agaccaagga 240

gcagatcgct gctaccgcgg gcatctcggc cggcgacccc gccatcggtg agctcatcgc 300

cgaggccatg gacaaggctg gcgaggaagg cgatcatcacc gtcgaggaga gcaacacctt 360

cggtctccag ctggagctga ccgagggcat gcgcttcgac aagggttca tctcgggcta 420

cttcgccacc gacgcggagc gccaggaggc cgctctcgag gacgcctacg tgctgctcgt 480

ctcgggcaag atctcgaccg tcaaggacct gctgccgctg ctggagaagg tcatccagtc 540

gggcaagccg ctcgcatca tcgccgagga cgtcgagggc gaggccctgt cgacgctcat 600

cgtc 604

<210> 54

<211> 604

<212> DNA

<213> Nocardia carnea

<400> 54

## Sequence Listing

---

cgaggatccc tacgagaaga tcggcgccga gctggtcaag gaagtcgcca agaagaccga	60
cgacgtcgcg ggcgacggca ccaccaccgc caccgtgctc gccagggcgc tggcgcgga	120
gggtctgcgc aacgtggccg cgggcgcgaa cccgctgggc ctcaagcgca gcatcgagaa	180
ggccgtcgag gccgtgaccg ccaagctgct cgacaccgcc aaggaggtcg agaccaagga	240
gcagatcgcc gccaccgcgg gcatctccgc gggcgacgcg tccatcggtg agctgatcgc	300
cgaggccatg gacaaggctg gcaaggaagg cgtcatcacc gtcgaggaga gcaacacctt	360
cggcctccag ctggagctga ccgagggcat gcgcttcgac aagggctaca tctccggcta	420
cttcgtgacc gatcccgagc gtcaggaagc ggtcctcgag gatccctaca tctgctcgt	480
cggctcgaag gtctccaccg tcaaggacct gctgccgctg ctggagaagg tcatccaggc	540
cggcaagccg ctgctgatca tcgccgagga cgtcgagggc gaggcctgtg cgaccctggt	600
cgtg	604

<210> 55  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence

<220>  
 <223> HSPF3

<400> 55	
atcgccaagg agatcgagct	20

<210> 56  
 <211> 20  
 <212> DNA  
 <213> Artificial Sequence



## Sequence Listing

---

<220>

<223> HSPR3

<400> 56

aaggtgccgc ggatcttggt

20